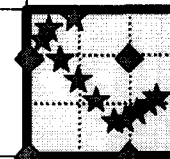
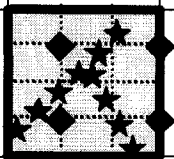
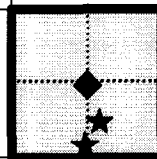
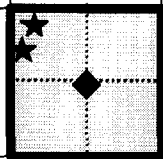


Attachment 4

Modified Lot Size / Configuration



SAI



- ★ Customer Locations
- ◆ Drop Terminal Locations

Attachment 5

Comparison of Microgrid Lots and Drop Terminals

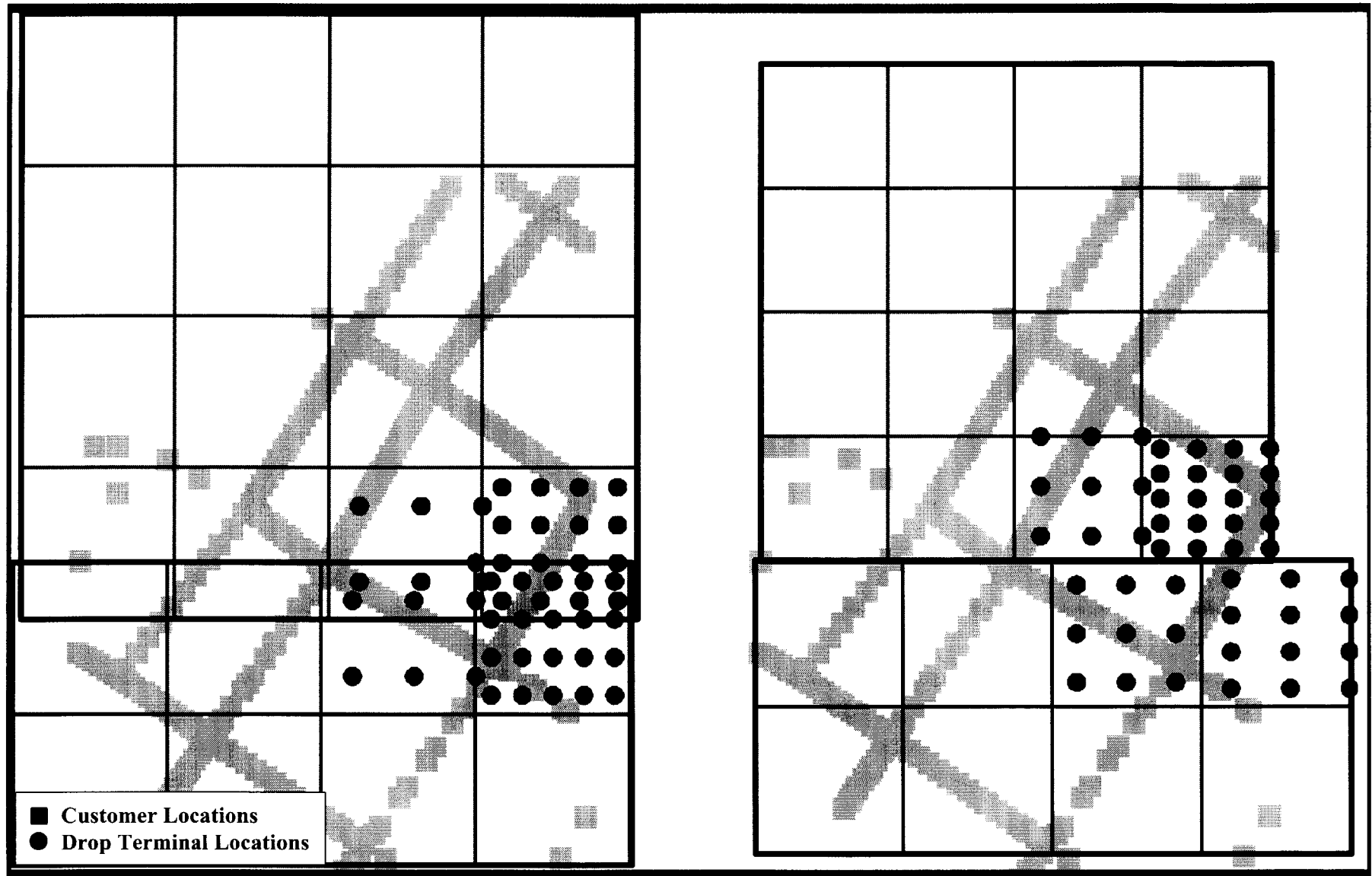
Current					
Lots	E/W	N/S	Built	Ratio	No. of DropTerm
1	1	1	1	1.00	1
2	2	1	2	0.50	1
3	3	1	3	0.33	2
4	2	2	4	1.00	1
5	3	2	6	0.67	2
6	3	2	6	0.67	2
7	4	2	8	0.50	2
8	4	2	8	0.50	2
9	3	3	9	1.00	4
10	2	5	10	2.50	3
11	4	3	12	0.75	4
12	4	3	12	0.75	4
13	5	3	15	0.60	6
14	5	3	15	0.60	6
15	5	3	15	0.60	6
16	4	4	16	1.00	4
17	3	6	18	2.00	6
18	3	6	18	2.00	6
19	5	4	20	0.80	6
20	5	4	20	0.80	6
21	3	7	21	2.33	8
22	6	4	24	0.67	6
23	6	4	24	0.67	6
24	6	4	24	0.67	6

Modified					
Lots	E/W	N/S	Built	Ratio	No. of DropTerm
1	1	1	1	1.00	1
2	1	2	2	2.00	1
3	2	2	4	1.00	1
4	2	2	4	1.00	1
5	2	3	6	1.50	2
6	2	3	6	1.50	2
7	2	4	8	2.00	2
8	2	4	8	2.00	2
9	3	3	9	1.00	4
10	3	4	12	1.33	4
11	3	4	12	1.33	4
12	3	4	12	1.33	4
13	3	5	15	1.67	6
14	3	5	15	1.67	6
15	3	5	15	1.67	6
16	4	4	16	1.00	4
17	3	6	18	2.00	6
18	3	6	18	2.00	6
19	4	5	20	1.25	6
20	4	5	20	1.25	6
21	4	6	24	1.50	6
22	4	6	24	1.50	6
23	4	6	24	1.50	6
24	4	6	24	1.50	6

Attachment 6 - Illustration of Overlapping Microgrids

Current Method

Modified Method



**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

RECEIVED

JUL 31 2001

**FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY**

In the Matter of)
Petition of WorldCom, Inc. Pursuant)
To Section 252 (e)(5) of the)
Communications Act for Expedited)
Preemption of the Jurisdiction of the)
Virginia State Corporation Commission)
Regarding Interconnection Disputes)
With Verizon Virginia, Inc., and for)
Expedited Arbitration)

CC Docket No. 00-218

In the Matter of)
Petition of Cox Virginia Telecom, Inc.)
Pursuant to Section 252 (e)(5) of the)
Communications Act for Preemption)
Of the Jurisdiction of the Virginia State)
Corporation Commission Regarding)
Interconnection Disputes with Verizon)
Virginia, Inc. and for Arbitration)

CC Docket No. 00-249

In the Matter of)
Petition of AT&T Communications)
Virginia Inc., Pursuant to Section 252 (e)(5))
of the Communications Act for Preemption)
of the Jurisdiction of the Virginia)
Corporate Commission Regarding)
Interconnection Disputes with Verizon)
Virginia, Inc.)

CC Docket No. 00-251

**DIRECT TESTIMONY OF TERRY L. MURRAY
ON BEHALF OF AT&T AND WORLDCOM, INC.**

JULY 31, 2001

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Exhibit (TLM-1): Curriculum Vitae of Terry L. Murray

1 **I. INTRODUCTION AND SUMMARY**

2 **Q. PLEASE STATE YOUR NAME, TITLE AND BUSINESS ADDRESS.**

3 A. My name is Terry L. Murray. I am President of the consulting firm Murray &
4 Cratty, LLC. My business address is 227 Palm Drive, Piedmont, CA 94610.

5 **Q. PLEASE DESCRIBE YOUR QUALIFICATIONS AND EXPERIENCE AS**
6 **THEY RELATE TO THIS PROCEEDING.**

7 A. I am an economist specializing in analysis of regulated industries. I received an
8 M.A. and M.Phil. in Economics from Yale University and an A.B. in Economics
9 from Oberlin College. At Yale, I was admitted to doctoral candidacy and
10 completed all requirements for the Ph.D. except the dissertation. My fields of
11 concentration at Yale were industrial organization (including an emphasis on
12 regulatory and antitrust economics) and energy and environmental economics.

13 My professional background includes employment and consulting
14 experiences in the fields of telecommunications, energy and insurance regulation.
15 As a consultant, I have testified or served as an expert on telecommunications
16 issues in proceedings before state regulatory commissions in California,
17 Connecticut, Delaware, the District of Columbia, Florida, Georgia, Hawaii,
18 Illinois, Kansas, Maryland, Massachusetts, Michigan, Missouri, Nevada, New
19 Jersey, New York, North Carolina, Oklahoma, Oregon, Pennsylvania, South
20 Carolina, Texas, Virginia, Washington and Wisconsin, and before the Federal
21 Communications Commission ("Commission"). My testimony in these

1 proceedings has concerned such issues as costing and pricing for retail services,
2 unbundled network elements and interconnection; universal service policy;
3 competition policy (including policy toward proposed mergers); and incentive
4 regulation. My curriculum vitae, attached as Exhibit (TLM-1) to this testimony,
5 provides more detail concerning my qualifications and experience.

6 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS**
7 **PROCEEDING?**

8 A. AT&T Communications of Virginia, Inc.,¹ (“AT&T”) and WorldCom, Inc.
9 (“WorldCom”) have asked me to address economic issues relating to the
10 modeling of recurring and nonrecurring costs for unbundled network elements and
11 the establishment of cost-based prices for these elements. Based on my analysis, I
12 have reached the following conclusions:

- 13 • As this Commission has already concluded for itself, both recurring and
14 nonrecurring prices for unbundled network elements should reflect
15 forward-looking economic costs. Forward-looking economic cost is the
16 cost standard that would prevail in a competitive market. Moreover,
17 prices based on forward-looking economic cost are nondiscriminatory in
18 that all competitors, including Verizon, will face the same cost for use of

1 This Affidavit is presented on behalf of AT&T Communications of Virginia, Inc., TCG Virginia, Inc., ACC National Telecom Corp., MediaOne of Virginia and MediaOne Telecommunications of Virginia, Inc. (together, “AT&T”).

1 comparable network functionality. Finally, prices based on forward-
2 looking economic costs give providers an incentive to realize efficiencies
3 and thereby to reduce costs.

- 4 • This Commission has previously adopted a Synthesis Model that
5 embodies forward-looking economic cost concepts and applies them to the
6 modeling of incumbent local exchange carrier network costs. As this
7 Commission is well aware, the same forward-looking economic cost
8 concepts apply to the modeling of costs for unbundled network elements.
9 Moreover, incumbent local exchange carriers provide unbundled network
10 elements over the same network that they use to provide universal service.
11 Therefore, the Synthesis Model provides a reasonable starting point for
12 developing costs for unbundled network elements.

- 13 • The “cost objects” being modeled in this arbitration proceeding are
14 wholesale unbundled network elements, not retail local exchange service.
15 Therefore, the Synthesis Model must be adjusted to reflect this change in
16 “cost objects” before it can be used to produce estimates of the cost of
17 unbundled network elements.

- 18 • Furthermore, the unbundled network elements at issue are those that
19 Verizon Virginia provides to competitors such as AT&T and WorldCom.
20 Therefore, the Synthesis Model inputs and assumptions need to be closely
21 examined to ensure that the model results reflect Virginia-specific input

1 values and assumptions *to the extent that an efficient carrier would make*
2 *different forward-looking choices, given Virginia-specific conditions, from*
3 *the choices reflected in the nationwide input values and assumptions that*
4 *this Commission previously adopted for use in calculating universal*
5 *service costs.*

- 6 • I understand that AT&T and WorldCom have reviewed these aspects of
7 the Synthesis Model and have made the modifications deemed necessary
8 to reflect the change of cost object from universal service to unbundled
9 network elements and to incorporate current conditions in Virginia.

10 Therefore, the results that AT&T/WorldCom witness Brian F. Pitkin
11 sponsors in his accompanying testimony provide an appropriate basis for
12 setting cost-based recurring prices for unbundled network elements.

- 13 • The Commission should ensure that it adopts a recurring price structure
14 for unbundled switching that reasonably reflects Verizon's capacity-driven
15 cost structure. A price structure that mimics the incumbent's underlying
16 cost structure best promotes fair competition between Verizon and entrants
17 using unbundled switching.

- 18 • To avoid unnecessary barriers to entry, the Commission should adopt
19 prices that reflect the distinctions between recurring and nonrecurring
20 costs inherent in the Synthesis Model and the AT&T/WorldCom
21 Nonrecurring Cost Model ("NRCM").

- 1 • The nonrecurring cost estimates that the NRCM produces reasonably
2 reflect forward-looking economic cost principles. Therefore, the results
3 that AT&T/WorldCom witness Richard Walsh sponsors in his
4 accompanying testimony provide an appropriate basis for setting cost-
5 based nonrecurring prices for unbundled network elements.
- 6 • The Commission should not permit Verizon to impose any explicit charge
7 for loop “conditioning” because the cost-based prices that AT&T and
8 WorldCom are proposing for unbundled loops are sufficient to recover the
9 full forward-looking economic cost of the function of providing
10 “conditioned” loops.
- 11 • If the Commission permits Verizon to assess any charge whatsoever for
12 access to loop makeup information, that charge should be very close to \$0
13 because the forward-looking economic cost of providing access to such
14 information is *de minimis*.
- 15 The remainder of my testimony explains the basis for each of these conclusions.

II. THE COMMISSION SHOULD SET RECURRING AND NON-RECURRING PRICES FOR UNBUNDLED NETWORK ELEMENTS THAT ARE COST-BASED AND NON-DISCRIMINATORY.

Q. THE COMMISSION WILL ESTABLISH RECURRING AND NON-RECURRING CHARGES FOR UNBUNDLED ELEMENTS IN THIS PROCEEDING. WHAT ECONOMIC PRINCIPLE OR PRINCIPLES SHOULD GUIDE THE COMMISSION IN SETTING THESE PRICES?

A. Two key principles should guide the Commission in establishing costs and setting prices for unbundled network elements.

First, as is consistent with the Commission's Total Element Long Run Incremental Cost ("TELRIC") methodology, the prices for unbundled network elements should mimic the prices that would prevail if Verizon sold the same functionalities in a competitive market. Competitive market forces would drive prices down to efficient forward-looking economic costs. Thus, to allow all providers of local exchange service to purchase inputs as if they were doing so in a competitive market, the Commission should establish prices for unbundled network elements that do not exceed forward-looking economic costs.

The Commission should also ensure that the price structures reflect cost causation. For example, if the cost of a function does not vary with the level of usage, then the price for that function should not be usage-based. Similarly, if the cost of a function is a recurring cost, then the price for that function should not be a one-time, nonrecurring charge.

Second, the prices for unbundled network elements should be non-discriminatory. In other words, the Commission should establish prices that

1 prevent Verizon from leveraging its monopoly control over local exchange
2 facilities and central office locations to gain a competitive advantage over new
3 entrants. To ensure non-discrimination, the prices for unbundled network
4 elements should not exceed the costs that Verizon itself bears for comparable uses
5 of network functionalities.

6 **Q. WHAT DO YOU MEAN BY “FORWARD-LOOKING ECONOMIC**
7 **COSTS”?**

8 A. By forward-looking economic costs, I mean the forward-looking cost over the
9 long run of the total quantity of the facilities and functions that are directly
10 attributable to, or reasonably identifiable as incremental to, each unbundled
11 network element, holding constant the incumbent local exchange carrier’s
12 provision of other elements. This definition corresponds to the Commission’s
13 conceptual definition of its TELRIC methodology as reflected in 47 C.F.R.
14 § 51.505(b).

15 The total quantity of facilities should include existing and reasonably
16 foreseeable demand for all uses of each element. In other words, the network
17 modeled should be one that has sufficient capacity to supply all existing demand
18 for all uses of each element, taking into account constraints such as the lumpiness
19 of investment and the need for a limited amount of spare capacity to allow for
20 defective equipment and some “churn” in the locations at which demand will
21 occur. “Growth” spare should not be reflected in the sizing of the network except
22 to the extent that placing such spare capacity today results in lower costs, on a net

1 present value basis, than would placing the capacity at the time at which it is
2 needed to fulfill demand. If any “growth” spare is included in sizing the network,
3 the total quantity of demand over which costs are unitized must reflect both the
4 current and “growth” demand, so that current customers do not subsidize the
5 costs of providing plant for future customers.

6 **Q. IF THE COMMISSION BASES PRICES ON FORWARD-LOOKING**
7 **ECONOMIC COSTS RATHER THAN “ACTUAL” EMBEDDED COSTS,**
8 **WILL VERIZON RECEIVE ADEQUATE COMPENSATION FOR THE**
9 **RISKS THAT IT INCURS IN PROVIDING UNBUNDLED NETWORK**
10 **ELEMENTS?**

11 A. Yes. Basing prices on forward-looking economic costs will provide adequate
12 compensation to Verizon because Verizon will receive the compensation that a
13 firm in a competitive market would receive. A firm that can recover all of its long
14 run forward-looking economic costs but no more is a firm that can remain in
15 business even in the long run. Such a firm is able to attract the capital necessary
16 to replace its plant and equipment as it becomes economically obsolete, and to
17 grow if the market is growing or if not all of the other firms with which it
18 competes can match the efficiency of the firm in question. Capital markets see
19 that such a firm can recover the costs that will prevail in that particular market
20 even under the most rigorous of competitive conditions. Thus, capital markets
21 view prices that are set at forward-looking long-run economic costs as being fully
22 compensatory.

1 Firms in competitive markets have no *guarantee* that they will recover all
2 of their costs. Instead, they have an *opportunity* to recover all of their costs *if* they
3 are efficient providers of services and/or facilities. To the extent that Verizon's
4 "actual" embedded costs exceed the efficient, forward-looking, long-run costs of
5 unbundled network elements, these are costs caused by its inefficiency, and not
6 costs that should be borne by the new entrants that purchase network elements
7 from Verizon.

8 Forward-looking economic costs include a cost of capital that reflects the
9 return that investors demand to compensate them for the risk associated with
10 investments. If Verizon were *guaranteed* recovery of its "actual" embedded costs,
11 then the appropriate cost of capital for use in a cost study for unbundled network
12 elements would be much closer to a risk-free cost of capital than to the market-
13 based cost that AT&T/WorldCom witness John M. Hirshleifer proposes that the
14 Commission use to establish cost-based prices for unbundled network elements.

15 **III. THE SYNTHESIS MODEL, AS MODIFIED BY AT&T AND**
16 **WORLDCOM, PROVIDES FORWARD-LOOKING ECONOMIC COST**
17 **ESTIMATES OF THE RECURRING COSTS OF UNBUNDLED**
18 **NETWORK ELEMENTS.**

19 **Q. WHAT INFORMATION DO YOU RECOMMEND THAT THE**
20 **COMMISSION USE TO SET RECURRING PRICES FOR UNBUNDLED**
21 **NETWORK ELEMENTS THAT BEST REFLECT VERIZON'S**
22 **CURRENT FORWARD-LOOKING ECONOMIC COSTS?**

23 **A.** I recommend that the Commission base recurring prices for Verizon's unbundled
24 network elements on the recurring costs that AT&T/WorldCom witness Mr.

1 Pitkin presents in his testimony. Mr. Pitkin determined these costs using a
2 version of the Synthesis Model, adapted for use in calculating unbundled network
3 element costs.

4 With reasonable modifications to produce state-specific results and to
5 report results for UNEs instead of universal service, the Synthesis Model is an
6 appropriate vehicle on which to base forward-looking economic cost estimates.
7 As the Commission is well aware, it selected that Model after an extensive review
8 of alternative cost models of non-rural incumbent local exchange carrier networks.
9 Parties to the Commission's universal service proceeding that developed the
10 Synthesis Model included a broad and nearly all-inclusive array of incumbent
11 local exchange carriers and their competitors, plus a significant number of
12 consumer advocates, state regulatory commissions and other interested parties.
13 This wide-ranging participation ensured that virtually every possible issue that
14 could arise in the context of an engineering economic model of non-rural
15 incumbent local exchange carrier networks was aired in the public record.

16 The Commission applied forward-looking economic cost principles in
17 evaluating the various models and in melding their best features to develop the

1 Synthesis Model.² The Commission has already concluded that the Synthesis
2 Model “generates reasonably accurate estimates of forward-looking costs.”³

3 **Q. ARE YOU SUGGESTING THAT THE FCC EVALUATED THE USE OF**
4 **THE SYNTHESIS MODEL AS THE BASIS FOR UNE COSTS AND**
5 **PRICES?**

6 A. No. However, the forward-looking economic cost criteria that the Commission
7 applied in developing the Synthesis Model for universal service purposes are
8 consistent with and largely identical to the forward-looking economic cost criteria
9 that the Commission has adopted for unbundled network elements. Indeed, in
10 adopting its forward-looking cost methodology for universal service, the
11 Commission specifically noted the desirability of using the same methodology
12 and cost basis for both universal service support calculations and permanent
13 prices for unbundled network elements.⁴

14 The Commission did caution that the *nationwide input values* used in the
15 Synthesis Model to calculate federal universal service support may not be

2 In the Matter of Federal-State Joint Board on Universal Service, CC Docket No. 96-45
and Forward-Looking Mechanism for High Cost Support for Non-Rural LECs, CC
Docket No. 97-160, FCC 99-304, adopted October 21, 1999 (“Inputs Order”) at ¶¶ 21-
22, footnotes omitted.

3 *Id.* at ¶ 23.

4 Report and Order, In the Matter of Federal-State Joint Board on Universal Service, CC.
Docket No. 96-45, adopted May 7, 1997, at ¶ 251. The FCC described its forward-
looking cost methodology for universal service in the preceding paragraph of that order.

1 appropriate for other purposes, such as determining prices for unbundled network
2 elements.⁵ Nevertheless, the Commission subsequently has made use of the
3 Synthesis Model to “benchmark” the appropriateness of the relative prices for
4 unbundled loops and switching in two recent orders addressing applications for
5 interLATA authority under Section 271 of the Telecommunications Act of 1996.⁶

6 **Q. DOES THE MANNER IN WHICH AT&T AND WORLDCOM HAVE**
7 **USED THE SYNTHESIS MODEL IN THIS PROCEEDING PRODUCE**
8 **COSTS THAT ARE AN APPROPRIATE BASIS FOR PRICING**
9 **UNBUNDLED NETWORK ELEMENTS?**

10 A. Yes. The results that Mr. Pitkin reports are not merely the outputs that one would
11 obtain using the nationwide input values that the Commission adopted for
12 universal service purposes. Instead, the results reflect a variety of Virginia-
13 specific inputs. Subject-matter experts assessed the default Synthesis Model
14 inputs and determined which of those inputs should be replaced with state-specific
15 values.

5 Inputs Order at ¶ 32.

6 In the Matter of Joint Application by SBC Communications Inc., Southwestern Bell Telephone Company, and Southwestern Bell Communications Services, Inc., d/b/a Southwestern Bell Long Distance for Provision of In-Region, InterLATA Services in Kansas and Oklahoma, CC Docket No. 00-217, released January 22, 2001, at ¶ 84; In the Matter of Application of Verizon New England Inc., Bell Atlantic Communications, Inc. (d/b/a Verizon Long Distance), NYNEX Long Distance Company (d/b/a Verizon Enterprise Solutions) and Verizon Global Networks Inc., for Authorization to Provide In-Region, InterLATA Services in Massachusetts, CC Docket No. 01-09, released April 16, 2001, at ¶¶ 22-23.

1 Also, as Mr. Pitkin explains in his testimony, certain of the Synthesis
2 Model expense calculations require modification to identify the expenses
3 associated with wholesale unbundled network elements, rather than retail
4 universal service. The modifications that Mr. Pitkin has performed remove retail-
5 related expenses, identify certain general support costs with specific unbundled
6 network elements to the extent that precise attribution is possible and add a
7 wholesale-only markup for overhead expenses to the various UNEs. In addition,
8 Mr. Pitkin has adjusted Synthesis Model loop investment calculation to ensure
9 that high capacity service line counts do not result in an under-assignment of
10 facility costs to the basic loop UNE. I have reviewed the methodology that Mr.
11 Pitkin used in making these modifications to the Synthesis Model and find that
12 the modifications are consistent with forward-looking economic cost principles.

13 **IV. THE COMMISSION SHOULD ADOPT A PRICE STRUCTURE FOR**
14 **UNBUNDLED SWITCHING THAT REFLECTS VERIZON'S CAPACITY-**
15 **DRIVEN COST STRUCTURE.**

16 **Q. SHOULD PRICES REFLECT THE UNDERLYING COST STRUCTURE**
17 **THAT VERIZON DOES OR WOULD FACE IF IT OPERATED**
18 **EFFICIENTLY?**

19 A. Yes. UNE prices should accurately reflect the structure of Verizon's forward-
20 looking economic costs, not just the average level of those costs. Price structures
21 that are not cost-based lead to less efficient outcomes and fewer benefits for
22 consumers. Moreover, price structures that do not track the incumbent's
23 underlying cost structure create the potential for unfair competition.

1 The Commission has previously addressed similar issues in the context of
2 geographically deaveraged prices for unbundled loops. In this proceeding, I urge
3 the Commission to address the match between price structures and cost structures
4 in the context of unbundled switching.

5 **Q. WHAT IS VERIZON'S UNDERLYING COST STRUCTURE FOR**
6 **UNBUNDLED SWITCHING?**

7 A. As AT&T/WorldCom witness Catherine E. Pitts explains, Verizon's switching
8 costs are, for the most part, capacity-related costs. The primary driver of the non-
9 traffic-sensitive ("NTS") portion of Verizon's switching costs is the number of
10 switch ports that Verizon serves either for its own end-users or on behalf of
11 competitors that purchase unbundled switching from Verizon. To the extent that
12 the remaining costs are traffic-sensitive, Ms. Pitts makes clear that those costs
13 would be caused by the need to serve *peak* minutes of use. In other words,
14 Verizon's switching *cost* structure is largely a per-line or per-port cost structure.

15 Peak-period usage can cause Verizon to incur additional switching costs.
16 As I will discuss further below, this does not mean that a rate structure relying on
17 minute-of-use charges accurately reflects Verizon's switching costs.

1 **Q. SHOULD PRICES REFLECT THE UNDERLYING COST STRUCTURE**
2 **THAT VERIZON DOES OR WOULD FACE IF IT OPERATED**
3 **EFFICIENTLY?**

4 A. Yes. A price structure that departs from the structure of efficient, forward-looking
5 economic costs can lead to over- or underconsumption of Verizon's unbundled
6 switching and over- or underrecovery of Verizon's costs.

7 Verizon's UNE price structure becomes the true cost structure of the
8 competitors that purchase UNEs from Verizon. Thus, if those competitors set
9 cost-based prices for the retail services that they offer to Virginia consumers to
10 reflect UNE prices that do not reflect the structure of Verizon's forward-looking
11 economic cost, the competitors' retail prices will send consumers the wrong
12 message about the costs that the consumers' decisions cause Verizon to incur. For
13 example, the competitors may pass along Verizon's switching usage charges as
14 per-minute charges to end users. Positive prices for usage may lead customers to
15 make fewer or shorter calls in off-peak periods when Verizon incurs few, if any,
16 usage-related costs to provide switching to the customer's retail service provider.

17 Similarly, positive prices for usage or features when Verizon incurs no
18 incremental cost to supply those rate elements can lead to substantial
19 overrecovery of forward-looking economic costs. The substantial growth in
20 switching usage over several years provides an instructive example of the
21 potential for such overrecovery. Assume that Verizon's prices for unbundled
22 switching would have exactly recovered all of its forward-looking economic costs
23 at, e.g., 1996 volumes, but that its price structure reflected a significant level of

1 costs that are actually incurred on a per-port basis as usage sensitive. Also
2 assume that Verizon's true forward-looking economic costs for each rate element
3 did not change from 1996 to 2000 and that only the volumes for switching usage
4 changed. Under these assumptions, Verizon would recover more than its total
5 forward-looking economic cost for switching if it sold all of its switched minutes
6 of use in 2000 at the prices that were accurate based on 1996 data. The possibility
7 of overrecovery under real-world conditions demonstrates the competitive
8 significance of rate structures. Improper volume-sensitive pricing creates
9 potential windfalls for Verizon and can severely deter competitive entry.

10 For all of these reasons, UNE prices should accurately reflect the structure
11 of Verizon's forward-looking economic costs, not just the average level of those
12 costs. Price structures that are not cost-based lead to less efficient outcomes and
13 fewer benefits for consumers.

14 **Q. CAN THE COMMISSION APPLY THE COSTS THAT MR. PITKIN IS**
15 **SPONSORING TO DEVELOP A REASONABLE COST-BASED RATE**
16 **STRUCTURE FOR UNBUNDLED SWITCHING?**

17 A. The Commission can apply the costs that Mr. Pitkin is sponsoring to develop
18 unbundled switching prices; however, the costs that Mr. Pitkin reports for
19 unbundled switching require some additional explanation and consideration
20 before the Commission can develop an appropriate cost-based rate structure for
21 this element.

1 Mr. Pitkin's output reports both traffic-sensitive and non-traffic-sensitive
2 switching costs. Again, recall that the "traffic-sensitive" switching costs are
3 primarily capacity costs driven by peak usage. To assist the Commission in
4 developing prices for unbundled switching, his output states the switching costs in
5 two formats: first, a more traditional format in which the total non-traffic-
6 sensitive switching cost is reported on a per-switch-port basis and the total traffic-
7 sensitive switching cost is reported on an average per minute-of-use basis; and
8 second, a format in which the total cost for unbundled switching is reported on a
9 per-switch-port basis.

10 **Q. WHICH OF THESE FORMATS REFLECTS THE MANNER IN WHICH**
11 **VERIZON ACTUALLY INCURS FORWARD-LOOKING SWITCHING**
12 **COSTS?**

13 A. Neither format precisely captures the manner in which Verizon actually incurs
14 switching costs, although both formats provide a reasonable basis for cost
15 recovery of Verizon's non-traffic-sensitive switching costs. These non-traffic-
16 sensitive costs are reported as per-port costs in both of Mr. Pitkin's reporting
17 formats. This treatment of non-traffic-sensitive switching costs comports with
18 Ms. Pitts' analysis of cost causation for Verizon's "getting started" costs and
19 appropriately captures all other port-driven costs. The cost of vertical features is
20 included in the port cost in both reporting formats.

21 The statement of Verizon's traffic-sensitive switching costs on a unit cost
22 basis presents a more difficult problem.

1 The “correct” way to report these traffic-sensitive costs — that is, the
2 reporting that would best reflect cost causation — would be to assign capacity
3 costs across usage at different times of the day and different days of the year
4 based on the likelihood of a peak occurring at that time. Each of Verizon’s
5 switches would have a different distribution of likely peaks, so the cost output of
6 the Synthesis Model would have to be calculated differently for each switch. The
7 public data available to AT&T and WorldCom do not enable us to unitize
8 Verizon’s peak-driven switching costs in a manner that precisely reflects cost
9 causation. Furthermore, unless Verizon were to charge different prices for use of
10 each of its switches, the Commission would still be faced with the problem of
11 how to aggregate the capacity costs for the individual switches into a meaningful
12 statewide average for Verizon.

13 As a practical solution to this problem, Mr. Pitkin has shown two
14 alternatives for unitizing Verizon’s traffic-sensitive costs. One method spreads
15 the peak-driven costs over *all* minutes-of-use; the other spreads the peak-driven
16 costs over *all* switch ports.

17 **Q. WHAT PRICE STRUCTURE WOULD BEST REFLECT VERIZON’S**
18 **UNDERLYING COST STRUCTURE?**

19 **A.** The best rate design to recover Verizon’s non-traffic-sensitive switching costs is a
20 flat-rated port charge. The best rate design to recover Verizon’s traffic-sensitive
21 switching costs is less straightforward because the available cost data do not
22 precisely match Verizon’s underlying cost structure.

1 At first blush, it might appear that traffic-sensitive costs should be
2 recovered through a usage-based price. That conclusion does not necessarily
3 follow, however, when the traffic-sensitive costs are peak-driven (as is the case
4 for Verizon's switching costs) and the usage-based price is applied to *all* usage,
5 off-peak as well as peak.

6 A price structure that recovers peak- or capacity-driven costs by spreading
7 those costs over all minutes of use would not accurately reflect the structure of
8 Verizon's forward-looking economic costs. As the Commission recently
9 observed in the context of reciprocal compensation, "[t]o the extent that transport
10 and termination costs are capacity-driven, moreover, virtually any minute-of-use
11 rate will overestimate the cost of handling an additional call whenever a carrier is
12 operating below peak capacity."⁷ This observation applies equally well to all of
13 Verizon's peak-driven costs for unbundled switching.

14 **Q. WHAT CONSEQUENCES WOULD FOLLOW FROM USAGE PRICES**
15 **THAT OVERSTATE THE COST OF OFF-PEAK MINUTES?**

16 A. As I noted above, recovery of peak-driven costs through average minute-of-use
17 prices can lead to underconsumption of Verizon's unbundled switching in off-
18 peak periods and overrecovery of Verizon's costs. Moreover, an average minute-

7 In the Matter of Implementation of the Local Competition Provisions in the
Telecommunications Act of 1996 and In the Matter of Intercarrier Compensation for ISP-
Bound Traffic, CC Dockets No. 96-98 and 99-68, FCC 01-131, released April 27, 2001,
at ¶ 76.

1 of-use price structure for Verizon's peak-driven costs could give Verizon an
2 unfair competitive advantage over new entrants that purchase unbundled
3 switching.

4 All of these undesirable consequences flow from one uncontrovertible
5 fact: Verizon's UNE price structure is, for the competitors that purchase UNEs
6 from Verizon, the competitors' cost structure.⁸ A competitor that must pay
7 Verizon usage-based charges for all minutes of use incurs real off-peak usage
8 costs, even though Verizon itself incurs little or no cost for off-peak switching.

9 **Q. PLEASE EXPLAIN HOW A MINUTE-OF-USE PRICE TO RECOVER**
10 **PEAK-DRIVEN COSTS COULD LEAD TO UNDERCONSUMPTION OF**
11 **SWITCHING AND OVERRECOVERY OF VERIZON'S COSTS.**

12 A. The following example illustrates how a minute-of-use price to recover peak-
13 driven costs could lead to underconsumption of off-peak switching and
14 overrecovery of Verizon's costs. Assume that a new entrant buys the UNE
15 platform from Verizon and pays a usage-based price for all minutes of use.
16 Assume also that the new entrant charges its retail customers prices that reflect the
17 structure of the competitor's costs. In that case, the new entrant would pass
18 through Verizon's switching usage charges as per-minute charges to end users.

8 Of course, a complete analysis of the economic welfare implications of switching rate designs would have to consider the underlying cost structure to the switch vendor, as well as Verizon's and the competitor's cost and price structure. The discussion in this testimony takes Verizon's cost structure as a given and addresses the question of how to translate this cost structure into prices.